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CLOUD AND THERMODYNAMIC CONDITIONS DURING CLASIC

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ABSTRACT

A significant challenge for global climate models (GCMs) is the representation of cumulus convection, which is an important component of the water and energy budget of the planet and plays a key role in the hydrologic cycle over continents, particularly in semi-arid regions and where agriculture is well developed. Continental cumulus convection is strongly modulated by land surface conditions and at the same time influences the land surface through rain-induced changes in soil moisture and its impact on photosynthesis. The primary goal of the Cloud and Land Surface Interaction Campaign (CLASIC) was to improve understanding of the physics of cumulus convection, particularly as it relates to underlying land surface conditions. A multiple-scale observation approach was used. Large-scale forcing was quantified using extensive synoptic-scale observations, while the macroscale cloud and land surface structure was characterized from the National Aeronautics and Space Administration (NASA) high altitude aircraft and satellite platforms. Cloud scale dynamics and microphysics were sampled using surface remote sensors, specialized aircraft, and two prototype radar systems. Three land surface super-sites served as the focal points for detailed surveys of the land surface characteristics and the corresponding surface fluxes, and detailed vertical flux profiles were measured in the subcloud layer above these sites using a helicopter observation platform. This poster presents analyses of the cloud and thermodynamic conditions observed during CLASIC in the context of large-scale forcing.
